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| 10/612,194 | 07/03/2003 | Chandra Mouli | M4065.0933/P933 | 4126 |

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| EXAMINER |
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TRAN, TAN N

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| ART UNIT | PAPER NUMBER |
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2826

DATE MAILED: 11/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/612,194

Applicant(s)

MOULI, CHANDRA

Examiner

TAN N TRAN

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-59 is/are pending in the application.
- 4a) Of the above claim(s) 15-19 and 40-59 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 20-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 09/26/03;10/06/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restriction

1. Applicant's election with traverse of species A of Group I, claims 1-14,20-39 is acknowledge. The traversal is on the ground(s) that "claim 1 is generic to the claims of Group I. Generic claim 1 does not include limitations that are absent in each of independent claims 15,20,25, and 39". Examiner agreed to applicant that claim 1 is generic; and the traversal is on the ground(s) that "there is a generic claim and a reasonable number of total claims within the elected Group I, it would not be a serious burden to examine all of the claims pending at this time. M.P.E.P. 803 directs as follows: 'If the search and examination of an entire application can be made without serious burden, the examiner must examine it on the merits'". These are not found persuasive because referring to the restriction requirement set forth in the Office Action, it clearly shows that the search is not coextensive as evidenced by the different fields of search as cited in the previous restriction requirement. Thus, it is clear that the examination of all of the disclosed species would be an undue burden. Therefore the election requirement is made final.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-14,20-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, lines 10,11; claim 20, line 15; claim 25, line 14; claim 39, line 36, "an I-V characteristic" is unclear as to whether it is being referred to the current-voltage (I-V) characteristic?

In claims 5,6,29,30, line 2; claims 8,32, lines 2,3; claim 20, line 12, "a highest first threshold voltage" is indefinite without identifying one first threshold voltage that is lower than "highest first threshold voltage".

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4,7,11-14,25-28,31,35-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (5,912,836) in view of Fossum (2004/0043529).

With regard to claims 1-3,13,14,25-27,37-39, Liu et al. discloses at least one transistor structure (100,101, or 102) comprising: at least one gate 100A; and first and second source and drain lines (100C,100B) serve as the first and second leads respectively couple to the source and drain regions formed in the transistor structure (100,101, or 102), wherein the at least one

transistor structure (100,101, or 102) has at least two threshold voltages (V_L, V_{Target}) associated with at least one channel, and wherein an I-V characteristic of the transistor structure (100,101, or 102) is determined at least in part by the threshold voltages. (Note figs. 2,3 of Liu et al.).

Liu et al. does not disclose the cell comprising a pinned photodiode, and a source follower transistor having the channel region formed between the source and drain regions wherein the image sensor coupled to the processor.

However, Fossum discloses the cell comprising a pinned photodiode 188, and a source follower transistor 136 having the channel region formed between the source and drain regions (140,142) wherein the image sensor 642 coupled to the processor 644. (Note figs. 6,7,10 of Fossum).

Therefore, it would have been obvious to one of ordinary skill in the art to form the Liu et al.'s device having the cell comprising a pinned photodiode, and a source follower transistor having the channel region formed between the source and drain regions wherein the image sensor coupled to the processor such as taught by Fossum because such structure is conventional in the art for forming transistor in order to perform the function of the CMOS imager pixel.

With regard to claims 4,28, it is inherent that Liu et al. discloses the at least one transistor structure (100,101, or 102) comprises first, second, and third channel regions connected in parallel because fig. 3 of Liu et al. is formed as an array of cells.

With regard to claims 7,31 Liu et al. and Fossum disclose all the claimed subject matter except for the at least one transistor structure comprises one channel region and wherein the channel region comprises a normal conduction path and at least one parasitic conduction path. However, it would have been obvious to one of ordinary skill in the art to form the at least one

transistor structure comprises one channel region and wherein the channel region comprises a normal conduction path and at least one parasitic conduction path in order to stabilize a capacitance component. Note lines 46-48 in column 4 of Ransom et al. (4,494,016) are cited to support for the well know position.

With regard to claims 11,35, it is inherent that Liu et al. discloses the at least one transistor structure having two or more gate oxide thickness because the transistor structure of Liu et al. having two or more transistors in order to form an array of cells. Liu et al. and Fossum disclose all the claimed subject matter except for the two or more threshold voltages result at least in part from the at least one transistor having two or more gate oxide thickness. However, in reference to the claim language referring to the function of the transistor structure having two or more gate oxide thickness, intended use and other types of functional language must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 152 USPQ 235 (CCPA 1967); In re Otto, 136 USPQ 458, 459 (CCPA 1963).

With regard to claims 12,36, Liu et al. discloses a sub-threshold region and a linear region provide a same for a signal. (Note figs. 2,3 of Liu et al.).

Allowable Subject Matter

5. Claims 5,6,29,30 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claims 5,6,8-10,29,30,32-34 are allowable over the prior art of record, because none of these references disclose or can be combined to yield the claimed invention such as the first channel region corresponds to a highest first threshold voltage and the second and third channel regions correspond to second and third threshold voltages respectively as recited in claims 5,29, the first channel region corresponds to a highest first threshold voltage and the second and third channel regions correspond to second threshold voltage as recited in claim 6,30, the normal conduction path is associated with a highest first threshold voltage and the at least one parasitic conduction path is associated with at least a second lower threshold voltage as recited in claims 8,32.

Conclusion

6. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Tan Tran whose telephone number is (571) 272-1923. The examiner can normally be reached on M-F 8:30AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for after final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

TT

Oct 2004


Minhloan Tran
Primary Examiner
Art Unit 2826